

# CBI Response to the Lambert Review of Business-University Collaboration

## Summary

There are many good examples of how business and universities are working well together in the UK, however there are still opportunities to improve the extent and depth of collaborations and for universities to focus more on creativity, innovation and activities of wider economic value or relevance to business. The following key points are highlighted:

- A business-friendly resource should be developed to help companies identify and access research, skills and facilities in the UK Higher Education sector.
- Intellectual property rights between business and universities should always be agreed between the partners involved in the research, reflecting the balance of inputs to the work made by each partner.
- Universities should improve the level of customer service offered to companies. For example, by being encouraged to develop well-defined, bespoke courses which add value to the business, and by improving attitudes towards time scales and deadline management.
- Support should be made available to help groups of companies with similar skill needs communicate their requirements to the HE sector and to develop and deliver appropriate courses.
- The role of universities in providing support for innovation in the service sector must be strengthened.
- Third leg funding for universities to engage with business and the wider community should be increased to at least £150m/yr. In return universities should be encouraged to become more commercially aware and proactive in seeking collaboration opportunities.
- To provide a balance to the current bias towards academic excellence, university research groups should be rewarded according to the business and economic impact of their work in research assessments used to determine the allocation of public funds. As a start, business and economic impact should be a significant component of the assessment for the new '6\*' category of research excellence. The extra funding awarded using these criteria should be available to all research groups currently rated 4 or above.
- Further support should be given to building knowledge transfer skills across the business-university interface.

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## Introduction

1. This is an important Review which is clearly attempting to address business-university links from the business perspective. The value of such links to business and the UK economy in general should not be underestimated. The recent HE-Business Interaction Survey conducted by the Higher Education Funding Council for England (HEFCE) calculated the cash value of universities working with business to be around £1 billion a year (approx. £530m directly and £470m from business and public sources combined in collaborative research). While, for business, recent CBI Innovation Surveys have indicated that collaborative links with universities related to innovation projects and/or skills development are prime factors in determining long-term innovation potential.
2. To highlight the importance that CBI places on business-university links we continue to maintain a dedicated committee (the Inter-Company Academic Relations Group—ICARG) which brings together business members with representative organisations including Universities UK, the Research and Funding Councils and Auril (the Association for University Research and Industry Links). The CBI also has a significant number of universities in direct membership. Our ICARG committee develops policy, shares best practice and ideas, and is a forum for networking and information exchange. In 2001, ICARG produced an updated version of its guide to best practice in business-university links (*Partnerships for Research and Innovation—between industry and universities*), which was widely circulated in business and the HE sector. The guide identified basic actions that universities and business should take to make collaborations work successfully. The CBI is also actively supporting the development of a knowledge transfer training resource in the UK (to be funded through the Office of Science and Technology). This initiative is aimed at developing the skills and knowledge of key people in academia, business and the public sector who play a vital role in helping to exploit the UK's world class knowledge base.
3. A number of CBI member companies and other organisations will be making their own submissions to the Lambert Review. In this paper we highlight some of the common key themes that have been reported to us. The views reflect:
  - discussions during a series of consultation seminars organised by the CBI and DTI as part of the wider Innovation Review,
  - a recent 'Business and Higher Education' survey of CBI members presented to the Secretary of State for Education and others on 10 April 2003 [the detailed findings from the survey are attached and should be read in conjunction with this submission],
  - the views of various CBI Committees, and
  - relevant information from CBI Innovation Surveys conducted in 2001 and 2002.
4. As the Lambert Review also has some overlap with the earlier Roberts Review for government on science, engineering, technology and maths skills, a summary of key points from the CBI submission is included at annex 1 for information.

## Best practice and the value of collaboration

5. In both our 2001 and 2002 Innovation Surveys, links with academia were a clear indicator of innovation potential and success for companies. In 2001 we noted that 75% of companies that had won Design Council Millennium Product awards had also collaborated with universities in the previous three years (compared to 35% of companies overall). In 2002, 60% of 'innovation stars' (our best performers) had formal links with universities to develop skills, compared to only 30% of 'lacklustre innovators' (companies in the survey with the lowest overall innovation potential). Perhaps even more striking, 73% of innovation stars said that they regularly monitored academic research to pick up

relevant ideas, compared to only 4% of lacklustre innovators, 7% of ‘moderate innovators’ and a third of ‘erratic innovators’. However, it should be noted that the overall proportion of companies monitoring academic research fell by 15% to a half of respondents between our 2001 and 2002 surveys, reflecting cutbacks in R&D activity as a consequence of worsening economic conditions.

6. As reported in the accompanying note of our Business and Higher Education survey, companies are involved with UK universities in a wide range of activities. The following list provides just a few examples of collaboration best practice:
  - BAE Systems, Ford, QinetiQ and Matra BAe Dynamics are all involved in the design, development and on-going delivery of Systems Engineering MEng and MSc courses at Loughborough University.
  - To help manage its business-university relationships, BAE Systems works with a small set of preferred academic partners in the UK that then act as hubs for interaction with the wider academic community—ensuring that the company can access skills and knowledge across many universities.
  - BNFL has created strategic research alliances with Leeds, Sheffield and Manchester Universities to create a stable skill and knowledge base in nuclear engineering that will be of benefit to both business and the academic community.
  - GlaxoSmithKline has been involved in co-sponsoring more PhD students than any other UK company. Amongst a wide range of research activities with universities, GSK also supports a teaching chair at the University of Hatfield in Hertfordshire.
  - Pilkington directly funds research at 5 UK universities and supports 10 industrial CASE studentships as part of its on-going research programme which, in turn, also helps the company with the recruitment of postgraduates in the UK.
  - Corus has an active programme of industrial training placements for university students and is the largest industrial partner in the Engineering Doctorate programme in Wales, which also helps to bring together other companies within the supply chain to help share skills and experience.
7. A further aspect of business-university links that is not captured in this list is the on-going informal contact between individuals or groups. Such contacts are almost impossible to measure as most are never reported or systematically recorded by either companies or universities. As a result, the value of these contacts is very difficult to assess, but is likely to be considerable.

## **Barriers**

8. Some of the barriers to collaboration that Members have identified include:
  - Finding the right people in the right institutions to talk to
  - Intellectual Property problems
  - Timeliness of interaction and general project management issues (e.g. failure of university to meet deadlines, or not understanding project details, or not being sufficiently ‘commercially aware’)
9. To put this in perspective, our 2001 Innovation Survey noted that companies reported fewer problems collaborating with universities (50% reported problems) than when collaborating with other organisations (75% reported problems here). In general it was also easier to get Board-level approval for collaborations with universities: 19% of companies identified this as a barrier to company-company collaborations, compared to only 7% in company-university collaborations.

10. **Finding the right people in the right institutions to talk to.** There is still no simple way for companies to identify areas of expertise in UK universities, what facilities may be available for companies to use, information about business-relevant training courses, or who should be contacted to initiate business links. Typically, connections are made through pre-existing networks or individual acquaintance, via information gathered from the university web site and/or through monitoring academic output (e.g. published papers, patents or conference talks). There are some useful regional initiatives such as the White Rose Partnership where universities work together and can help direct business to the most appropriate contacts within the group, but UK coverage at this level is patchy.
11. Most of the information needed to develop a useful UK-wide resource for business and others seeking to engage with the Higher Education sector is already available in one form or another. For example via individual university web sites, from the list of project grants given out by the Research Councils, and contained within the expertise listing that universities provide as part of the Research Assessment Exercise. It should be a relatively straightforward task to pull all of this together into a web-accessible format, perhaps based around a series of interactive maps (e.g. geographically and by subject) and a search facility. We are aware of at least a couple of commercial organisations that provide connection services of this kind, but a basic level of information relating to work, people and facilities that are supported by public funds should be made available centrally.
12. For example, a resource should be available that would easily identify centres of research excellence in a particular field across the UK, along with a listing of current publicly-funded projects in the individual research groups, plus details of staff capabilities and supporting infrastructure for collaborative research.
13. **IP issues.** Universities and business typically manage to reach acceptable agreements on the management and exploitation of any intellectual property that results from their interactions. Standard IP terms and conditions used by business will usually apply if the nature of the interaction is a straightforward contract for research (for example).
14. Where problems arise they are usually over collaborative interactions where the nature and the relative value of the work to an overall project may be seen rather differently from the business and university perspectives. Companies report that universities often want to hold the IP on joint work although they are probably not in the best position to exploit it (nor to secure adequate long-term protection in all relevant markets). There is often also an order of magnitude difference of opinion on the actual value of IP as it can typically cost 10 or 100 times more than the cost of the original research project to turn the IP into a product with commercial value. Whereas, from the university perspective, there are clear financial pressures to maximise income from work with business as public funding becomes restricted or more difficult to access.
15. The extent of friction over joint IP issues appears to be increasing and, despite protestations that this is not the case, the government also appears to be interested in changing IP arrangements in UK universities to adopt the approach used in the US. In a paper the CBI submitted to Ministers at the end of last year, we said:

**Extract from, *Comments on the government's strategy for science, engineering, technology & innovation*, CBI, December 2002...**

We have grave concerns that the government appears to favour so called 'Bayh-Dole' type legislation in the UK. The Bayh-Dole Act was introduced in the US in 1980 to encourage universities to file patents, exploit their research, engage in collaborations with industry and generally make the most of their Federal funding. The aims were reasonable but in effect all intellectual property generated by research which benefits from any element of Federal

funding (e.g. by virtue of general support given for university facilities) will vest in the university, rather than with any commercial funding partner. This causes considerable problems for companies attempting to secure a sensible share of IP rights.

Box 3.1 in *Investing in Innovation* makes a similar statement concerning research in UK universities which might benefit in part from Funding Council support via the research assessment exercise allocations: ‘... *any intellectual property generated by virtue of the research will vest in the university rather than with the commercial partner...*’ (*Investing in Innovation*, page 34). This is wholly unacceptable. IP arrangements need to be agreed between the partners involved in the research. The agreement should reflect the balance of inputs to the work made by each partner in a fair and straightforward way. Agreements should also reflect the additional investment required to take the research through to exploitation—in most cases the costs and risks involved in this phase will be much more significant than for the initial research.

16. Our position remains that intellectual property rights between business and universities should always be agreed between the partners involved in the research, reflecting the balance of inputs to the work made by each partner. IP should not automatically vest with the university and opportunities for the commercialisation of publicly funded research by business should not be restricted by government policy.
17. As an example of how business and universities can work together to solve IP issues, we would draw attention to the recent CASE studentship agreement drawn up between GlaxoSmithKline and the Russell Group of research intensive universities in the UK. This is a collective agreement—reducing the need for individual negotiations—the text of which has now been made freely available by GlaxoSmithKline as a template for other companies to use for their own studentship contracts.
18. **Time and management issues.** SMEs in particular often report difficulty in getting universities to deliver timely and business-oriented research and consultation advice. In our recent consultation seminars for the Innovation Review one company described universities as being, ‘unapproachable to the average small company’.
19. CBI believes that this must change and that universities should focus on improving the level of customer service offered to companies of all sizes. In general, universities need to become more commercially aware and continue to make improvements to their overall efficiency and productivity. The research work, training and other activities they undertake should start to become more focused on the needs of business, involving business directly in helping to set priorities and delivering outputs in a form that can most easily be used by business. For example, by working with individual companies or groups of companies to develop bespoke courses which add value to the business and are delivered in a manner which fits in with the business work plan.
20. A specific concern has been raised by CBI members about the possibility of universities increasing the general overhead rate that they charge companies for R&D. As with IP, the price of research should be for the partners to decide on an individual basis, based on factors such as quality, levels of academic input, importance to the company, and timeliness of delivery. Cost increases that are not linked to value added factors such as improvements in quality will not be welcome and could damage relations between academia and industry. Left unchecked, the end result may be that work is either transferred outside of the UK, is cut back in scope, or is carried out internally rather than through collaboration.
21. Another general point that needs to be addressed is the interaction between universities and businesses in the service sector. Companies easily recognise the value that universities can bring to scientific or creative projects, but feedback from our Innovation Review

seminars suggests that universities could also take a much more active role in providing support for activities related to service innovation.

### **Resources to support collaboration with business**

22. The CBI has been very supportive of the government's progress in introducing and now giving permanency to the so-called 'third leg of funding' for universities. This funding supports the development of capability in universities to engage in knowledge transfer activities with business, the public sector and others, and to reach out to the wider community. Currently the amount of public money dedicated to this activity is around £90m a year, while the CBI recommended in the 2002 Spending Review that the government should raise this to £150m a year. In comparison, around £2 billion a year of public funds is available for research in UK universities.
23. Further support should be made available to universities to facilitate their interactions with business and to encourage them to place more emphasis on activities that are of direct benefit to business or have a wider economic value. Increasing the level of resources available under the third leg initiative would have an immediate benefit.
24. In addition, university research groups should be rewarded according to the business and economic impact of their work in research assessments used to determine the allocation of public funds. In the CBI submission to the Funding Councils' on-going review of research assessment we have stressed the need to balance out the current bias towards academic excellence by incorporating more criteria that are of relevance to business and to give these criteria increased weight in the overall rating assessment. Key parts of our proposed assessment model are:
  - Making better use of existing independent reviews (such as those done by business before it decides to engage in a piece of work with a university)
  - Introducing factors based on the impact of the research and also on the diversity of research income
  - Reducing the focus on publications
  - Introducing an algorithm as a significant part of the assessment for most groups
  - Using international peer review and assessment by research users only for groups claiming significant amounts of work at international levels of research excellence and/or of significant impact to business or other users
  - Linking the assessment to a forward-looking business plan
  - Conducting rolling assessments to allow emerging or rapidly developing areas of activity to be assessed on different time scales
  - Focusing the assessment at the level of research groups, rather than departments, and
  - Assessing different subjects in different ways, so that, for example, the Physical Sciences might need to meet a different set of assessment criteria to some Arts and Humanities subjects.
25. A new research assessment mechanism is not expected to be introduced before 2008, but action could, and should, be taken now to introduce the business impact criteria to the new '6\*' rating of departments that was introduced in the Higher Education White Paper earlier this year. HEFCE's interim measure of distributing additional funds under this initiative to departments that gained 5\* ratings in two successive Research Assessment Exercises is not acceptable because this merely reinforces the bias towards pure academic excellence. In addition to including a significant business/ economic impact measure in

the 6\* rating assessment we recommend that the rating and associated funding should be open to all research groups currently rated at 4 or above.

26. The skill base for successful knowledge transfer activities also needs to be built up. There is currently a £1m challenge fund that the Office of Science and Technology is making available to begin to address this, but additional resources from the overall third leg fund could be used to give added impetus to the initiative. To ensure that the knowledge transfer training is effective, courses or other resources that are developed should be open to business, the public sector and others as well as academia. Experience from the 'Praxis' initiative on knowledge transfer training—set up under the Cambridge-MIT collaboration and recognised as an excellent initiative in its own right—should also be incorporated into future training developments.
27. An insightful comment from one of our recent Innovation Review seminars was that business links with universities were created and maintained for business reasons, not academic ones. It was then up to the entrepreneurial skills of people in the university to progress the opportunities for collaboration further.

### **Communicating the skill needs of business to universities**

28. This is a direct follow-up to a section of the Roberts Review, which identified that the process is *ad hoc* at best. CBI members have told us that the most effective way to inform universities about up-coming and long-term skill needs is to maintain an open dialogue with key people in relevant faculties. Then, to get the best results in terms of people output, it was recognised that businesses often had to work on developing relevant degree courses with a university. In general there was praise for the responsiveness of universities to this sort of interaction.
29. Companies without ongoing interests with university departments or without strong individual connections found it much more difficult to influence university teaching and training activities. In these cases it is probably more appropriate for groups of companies with similar skill requirements to work together on a regional or sector basis to engage with universities. Facilitating such interactions and the subsequent cost of designing and delivering new courses would be an appropriate use of public funds. The experience of the Research Councils in facilitating the development of business-relevant 'Masters Modules' should be drawn upon here.
30. At one of our Innovation Review seminars it was noted that influencing the technological aspects of education in universities was relatively easy. The greater challenge was to influence entrepreneurship. This required significant effort from business people to attend the university and give lectures or to run seminars. It was recognised that most degree courses (not just science and technology) could benefit from the injection of more practical examples of business issues, but the time involved in putting business people in front of graduates was a significant limiting factor. In addition to this there were new concerns about proposals (inferred from the recent Higher Education White Paper) that might require business experts to undertake specific training before being allowed to give occasional lectures in universities. Clearly, we welcome measures to raise the quality of teaching in universities, but the government must ensure that this requirement does not unintentionally restrict opportunities to bring in wider expertise. This would only discourage business involvement in teaching and would ultimately hamper efforts to improve business-university collaboration in the UK.

Annex 1: Summary of main points in CBI response to the Roberts Review of science, engineering, technology and maths skills.

**SET skills: priority issues**

- The number of suitably qualified SET teachers in UK schools should be increased. All teachers should be involved in continuous professional development.
- The review of teacher pay and conditions should focus on addressing shortages in maths and science.
- Measures being taken to improve the standards of school science, design and technology laboratories should be stepped up.
- Adequate resources need to be provided for the Science Ambassadors scheme so that it can start to operate effectively. The scheme should then be widened to encourage postgraduate students to take up paid teaching assistant posts in local schools.
- The government should ensure that the new GCSE science curriculum adequately responds to the needs of business and that the apparent difference in difficulty between science and non-science subjects is reviewed.
- The government should examine in more detail the impact of possible debt, socio-economic, gender and ethnicity factors on students' course choices to determine if SET courses place students at a real or perceived disadvantage.
- Advice on SET subjects and careers needs to be improved across the educational system. Career services need to develop a network of strong links with a greater range of SET employers and could be more proactive in making links with SMEs.
- The pool of businesses and other organisations involved in offering student placements in SET subjects should be widened. Further encouragement should be given to industrialists to spend time in universities, and for academics to spend periods of time in industry.
- The government should act quickly to extend PhD stipends to EU students wishing to work on collaborative research projects in the UK.